ENVIRONMENTAL REPORT
GROUND AND SURFACE WATER REPORT
ADDENDUM 1

for

BARITE HILL MINE
McCormick, South Carolina

Prepared for

GWALIA (USA) LTD.
Denver, Colorado

Prepared by

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.

August 1989

Job #262-88101

INTRODUCTION

Gwalia (USA) Ltd. has submitted applications to the South Carolina Land Resources Conservation Commission (LRC) and Department of Health and Environmental Control (DHEC) to allow the construction and operation of gold mining activities and waste handling facilities at the Barite Hill Mine site in McCormick County, South Carolina. The proposed mine site is located on approximately 1,600 acres, two miles south of the Town of McCormick along U.S. Highway 221. As part of the application for the LRC permit, environmental studies are being conducted at the site to establish background conditions prior to the initiation of mining activities.

Environmental Technology Engineering, Inc. (ETE) has been contracted to install ground water monitor wells and collect background sampling data from the wells and on-site streams for presentations to the necessary state agencies. This report presents the data gathered for presentation to LRC to meet their permitting requirements.

DATA PROCUREMENT

Ground Water

Between July 8, 1989 and July 19, 1989, ETE installed five (5) monitor wells at the mine site. The five (5) wells are located as indicated on Figure 1. The wells were installed downgradient of the three (3) proposed waste disposal areas. Copies of the boring logs for each well are included in Appendix 1.

Background samples were collected from monitor wells GW-2, GW-3, and GW-6 on August 1, 1989. Sampling parameters were selected based on the effluent limits proposed in the draft NPDES permit plus the appropriate indicator parameters. Field data is presented in Table 1. Copies of the analytical results and the chain-of-custody forms are included in Appendix 2.

Surface Water

Surface water and sediment samples were collected on July 20, 1989 from the tributaries of Hawe Creek located on the site. Samples were taken at the approximate locations of Outfalls 001, 002 and 003 as shown on Figure 1. Sampling parameters were selected based on the effluent limits proposed in the draft NPDES permit plus the appropriate indicator parameters. Field data is presented in Table 1. Copies of the analytical results and chain-of-custody forms are included in Appendix 2.

TABLE 1
Barite Hill Gold Mine
Field Data
Background Sampling

	pH	Spec. Cond.	Water Level T.O.C.
GW-2	7.2	550	13.6 ft.
GW-3	6.2	200	8.3 ft.
GW-6	6.6	650	19.9 ft.
Outfall 001	6.5	-	-
Outfall 002	6.8	-	-
Outfall 003	6.9	-	-

SUMMARY

A review of the analytical data for the ground water and stream, sediment and water, background samples indicates that levels are within the range of values native to South Carolina and will provide a good data base for comparison of future data collected from the site.

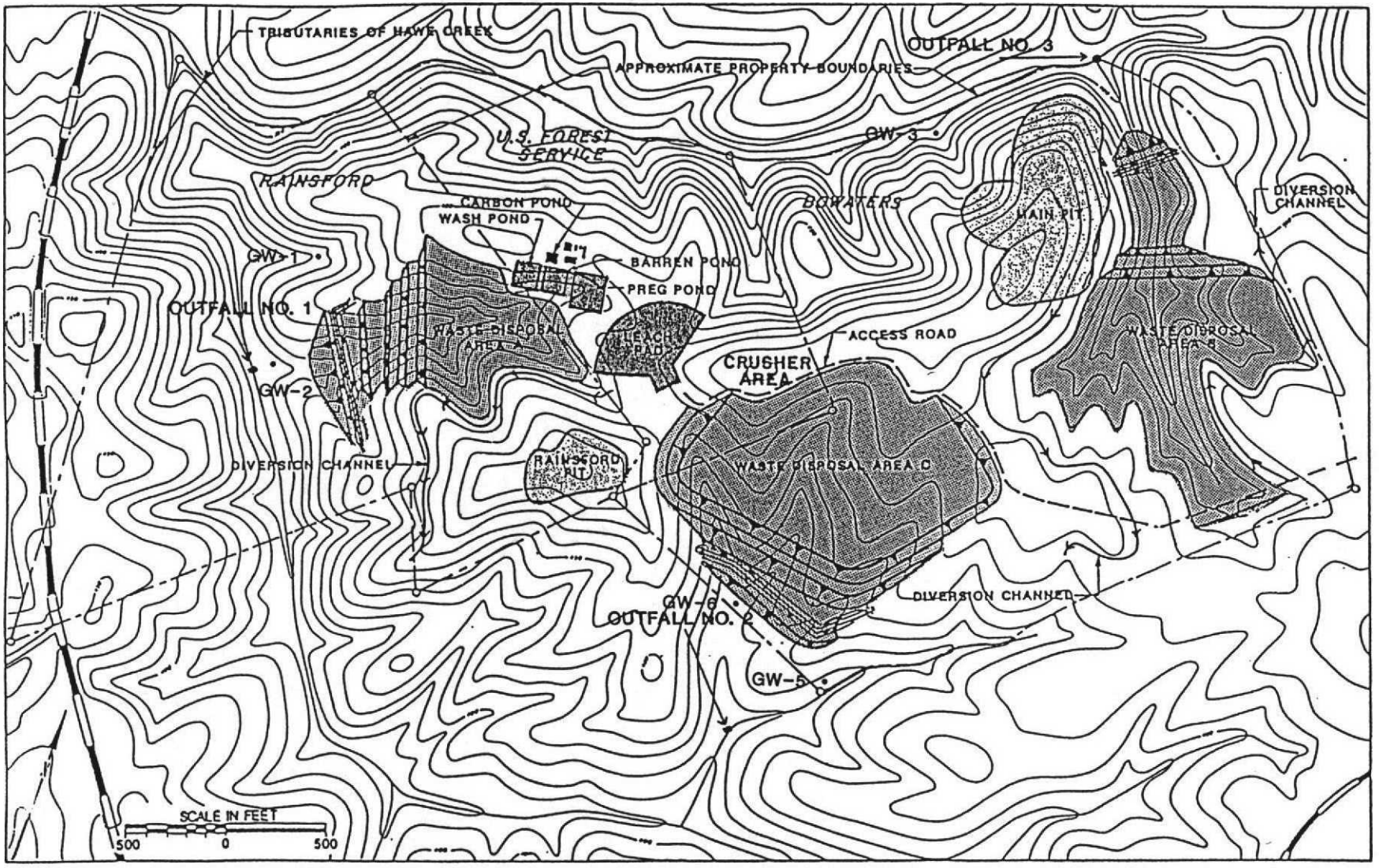


FIGURE 1 SITE LAYOUT MAP

SOURCE: D.P. ENGINEERING

APPENDIX 1

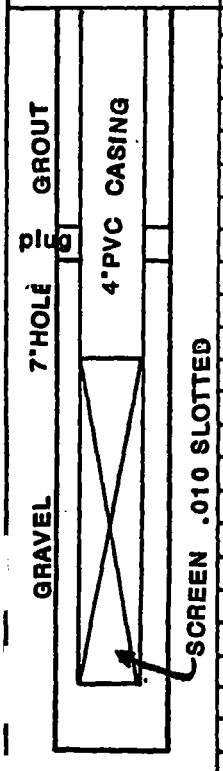
ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS AND HYDROGEOLOGIST
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. ETE - GW 1

PROJECT: Groundwater Well Installation
SHEET NO. 1 OF 1
CLIENT: Gwalia USA - Barite Hill Project - McCormick
JOB NO. 262-88101
BORING CONTRACTOR: ETE
ELEVATION
DATE SHARTED 7/13/89
DATE FINISHED 7/17/89
DRILLER J. Leaphart
INSPECTOR E. Aufderhaar
P. Lorris

GROUND WATER					CAS.	SAMP.	CORE	TUBE
DATE	TIME	WATER EL.	SCREEN	TYPE				
				DIA.				
				WT.				
				FALL				



DEPTH FEET	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
0		STRAIGHT AUGER		Brown, tan SILTY CLAY, trace (+) F/M sand	Moist
5				Tan, white weathered SAPROLITIC CLAY	
10				Tan, white weathered SAPROLITIC CLAY with limited argillitic clay horizons	Moist
15				Tan, white weathered SAPROLITIC CLAY	Moist Becoming Saturated
20				Tan, white weathered SAPROLITIC CLAY	Saturated TD Boring = 23.0' TD Well Set = 21.0'
25					
30					
35					
40					
45					

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS AND HYDROGEOLOGIST
HYDROGEOLOGIC SERVICES

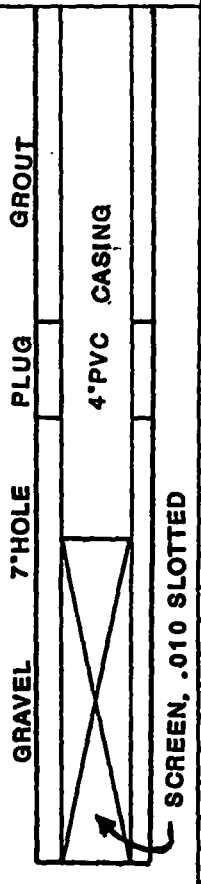
TEST BORING LOG

BORING NO. ETE - GW 2

PROJECT: Groundwater Well Installation
SHEET NO. 1 **OF** 1
CLIENT: Gwalia - USA - Barite Hill Project - McCormick, S.C.
JOB NO. 262-88101
BORING CONTRACTOR: ETE
ELEVATION

GROUND WATER					CAS.	SAMP.	CORE	TUBE
DATE	TIME	WATER EL.	SCREEN	TYPE				
				DIA.				
				WT.				
				FALL				

DATE SHARTED 7/14/89
DATE FINISHED 7/19/89
DRILLER J. Leaphart
INSPECTOR P. Lorris
E. Aufderhaar



DEPTH FEET	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
0		STRAIGHT AUGER		Tan, yellow SAND (f.m.c.), SILT, and CLAY	
5					
10				Tan, yellow SAND (f.m.c.), SILT, and CLAY	Moist
				Tan, yellow, more firm SAND (f.m.c.), SILT and CLAY	
15				Tan, white, dense BARITE with weathered zones	Moist
20				Very dense, tan, brown weathered BARITE with discontinuous ANDESITE occurring	
25				Dense, tan, brown weathered BARITE	Saturated
30					
35					
40					
45					

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS AND HYDROGEOLOGIST
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. ETE - GW 3

PROJECT: Groundwater Well Installation
SHEET NO. 1 OF 1
CLIENT: Gwalia USA - Barite Hill Project - McCormick, S.C.
JOB NO. 262-88101
BORING CONTRACTOR: ETE
ELEVATION

GROUND WATER					CAS.	SAMP.	CORE	TUBE
DATE	TIME	WATER EL.	SCREEN	TYPE				
				DIA.				
				WT.				
				FALL				

DATE SHARTED 7/8/89
DATE FINISHED 7/11/89
DRILLER J. Leaphart
INSPECTOR P. Lorris

WELL CONSTRUCTION	DEPTH FEET	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
GROUT; 4"PVC CASING; plug; GRAVEL 7"HOLE; SCREEN .010	0		STRAIGHT AUGER		Orange brown SAND f/m/c SILT & CLAY	
	5				Brown, SILTY CLAY trace (+) f. sand	
	10				Brown, SILTY CLAY trace (+) f. sand	Moist
	15				Hard, dense, light blue ARGILLITE slightly weathered	
	20				Very dense light blue ARGILLITE, saturated zones	Fractures saturated
	25					
	30					
	35					
	40					
	45					

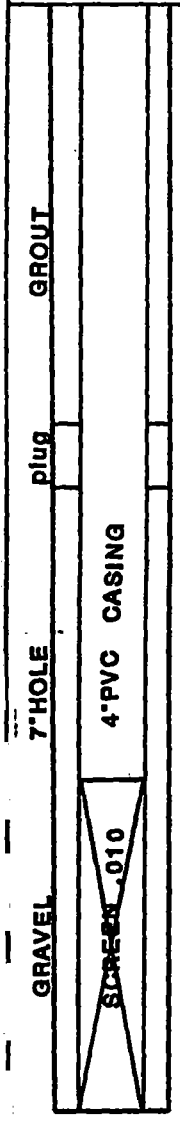
ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS AND HYDROGEOLOGIST
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. ETE - GW 5

PROJECT: Groundwater Well Installation
SHEET NO. 1 OF 1
CLIENT: Gwalia USA - Barite Hill Project - McCormick, S.C.
JOB NO. 262-88101
BORING CONTRACTOR: ETE
ELEVATION
DATE SHARTED 7/11/89
DATE FINISHED 7/13/89
DRILLER J. Leaphart
INSPECTOR P. Lorris
E. Aufderhaar

GROUND WATER					CAS.	SAMP.	CORE	TUBE
DATE	TIME	WATER EL.	SCREEN	TYPE				
				DIA.				
				WT.				
				FALL				



DEPTH FEET	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
0		STRAIGHT AUGER		Tan orange SAND, SILT and CLAY f/m/c trace (-) mica	
5				Tan, weathered SAPROLITE, BARITE	
10					
15				Very dense, tan & white BARITE	
				Very dense, tan & white BARITE	Moist
20				Very dense, tan & white BARITE	
25				Very dense, tan & white BARITE	
30					Fractures
				Very dense, tan & white BARITE	Saturated @ 30'
35					
40					
45					

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS AND HYDROGEOLOGIST
HYDROGEOLOGIC SERVICES

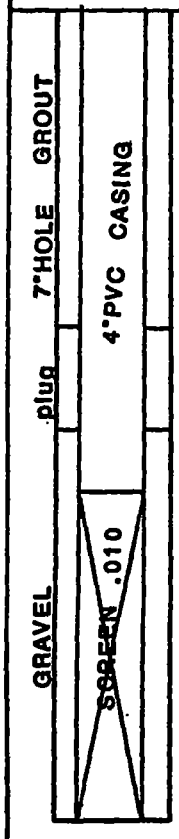
TEST BORING LOG

BORING NO. ETE - GW 6

PROJECT: Groundwater Well Installation
SHEET NO. 1 **OF** 1
CLIENT: Gwalia USA - Barite Hill Project - McCormick, S.C.
JOB NO. 262-88101
BORING CONTRACTOR: ETE
ELEVATION

GROUND WATER					CAS.	SAMP.	CORE	TUBE
DATE	TIME	WATER EL.	SCREEN	TYPE				
				DIA.				
				WT.				
				FALL				

DATE SHARTED 7/12/89
DATE FINISHED 7/18/89
DRILLER J. Leaphart
INSPECTOR P. Lorris
E. Aufderhaar



DEPTH FEET	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6 INCHES	CLASSIFICATION	REMARKS
0		STRAIGHT AUGER		Red-orange weathered SAPROLITE	
5				Red weathered BARITE m. dense c/f grained	
10				Dense BARITE	Moist
15				Very dense, blue-green ARGILLITE with interstitial tan-white Barite	Withstood up to 700 PSI Water Marks
20				Hard, weathered tan BARITE	
25				Very dense white-tan BARITE	Saturated @ 22' with fractures evident
30					
35					
40					
45					

APPENDIX 2

WADSWORTH/ALERT
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ANALYTICAL SUMMARY

BARITE HILL PROJECT
McCORMICK, SOUTH CAROLINA
JULY 1989

PRESENTED TO

MR. MICHAEL YOUNG

OF

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.

August 22, 1989

Wadsworth/ALERT Laboratories, Inc.

Michael P. Sekel

Michael P. Sekel,
Laboratory Manager

HEADQUARTERS AND LABORATORY
P.O. Box 2912
4101 Shuffel Drive, N.W.
North Canton, OH 44720
(216) 497-9396

REGIONAL LABORATORY
P.O. Box 31454
5405 Schaaf Rd.
Cleveland, OH 44131
(216) 642-9151

REGIONAL OFFICE
1445 Pisgah Church Rd.
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(803) 957-8590

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Route 3 - Box 235
Bldg. 170, Bartow Airport
Bartow, FL 33830
(813) 533-2150

WADSWORTH/ALERT
LABORATORIES, INC.

INTRODUCTION

This report summarizes the analytical results of water and soil samples from the Barite Hill project in McCormick, South Carolina. The samples were submitted by Environmental Technology Engineering, Inc. to Wadsworth/ALERT Laboratories, Inc. on 21 July and 2 August 1989. Wadsworth/ALERT Laboratories, Inc. provided independent, analytical services for this project as a sub-contractor to Environmental Technology Engineering, Inc. of Lexington, South Carolina under the direction of Mr. Michael Young, Project Manager.

A total of six (6) water samples and three (3) soil samples were collected by ETE and submitted to Wadsworth/ALERT Laboratories, Inc. The first set, received on 21 July 1989, had three (3) water samples and three (3) soil samples. The second set, received on 2 August 1989, contained six (6) water samples. Three (3) of the samples were resamples of the first set because of holding time constraints. The samples were accepted into the laboratory in accordance with documented sample acceptance procedures. All samples were analyzed for a variety of inorganic and heavy metal parameters as specified by ETE. These parameters and associated analytical methods are outlined in this report along with a summary description of Wadsworth/ALERT Laboratories, Inc. QA/QC program. Sample analytical results are sequentially presented at the rear of the report.

WADSWORTH/ALERT
LABORATORIES, INC.

ANALYTICAL METHODS

Wadsworth/ALERT Laboratories utilizes only USEPA approved analytical methods and instrumentation. The analytical methods utilized for the analysis of these samples are listed below.

PARAMETER		METHOD
ORGANICS		
Oil & Grease		** SW846 Method 9070,9071
Phenolics		** SW846 Method 9066
Total Organic Carbon		** SW846 Method 9060
METALS		
Arsenic	EPA Method 206.2	** SW846 Method 7060
Barium	EPA Method 208.1	** SW846 Method 7080
Cadmium	EPA Method 213.1	** SW846 Method 7130
Chromium	EPA Method 218.1	** SW846 Method 7190
Chromium+6	EPA Method 218.5	** SW846 Method 7196
Copper	EPA Method 220.1	** SW846 Method 7210
Lead	EPA Method 239.1	** SW846 Method 7420
Mercury	EPA Method 249.1	** SW846 Method 7520
Selenium	EPA Method 272.1	** SW846 Method 7760
Zinc	EPA Method 289.1	** SW846 Method 7950
INORGANIC - NON-METALLICS		
Cyanide, total	EPA Method 335.2	** SW846 Method 9010
Total Suspended Solids		** EPA Method 160.2

Note: ** indicates usage of this method to obtain results for this report.
Note: EPA Methods - Methods for Chemical Analysis of Water and Wastes, USEPA, 600/4-79-020, March, 1983. July, 1982.
Std.Methods - Standard Methods for the Examination of Water and Wastewater, APHA, 16th edition, 1985.
USEPA Methods- from 40CFR Part 136, published in Federal Register on October 26, 1984.
SW846 - Test Methods for Evaluating Solid Waste Physical/Chemical Methods, 3rd Edition, USEPA, 1986

WADSWORTH/ALERT
LABORATORIES, INC.

ANALYTICAL RESULTS

The analytical results for the samples submitted by ETE from the Barite Hill project are presented on the following pages.

Outfall #1 (water)
Outfall #1 (soil)

Outfall #2 (water)
Outfall #2 (soil)

Outfall #3 (water)
Outfall #3 (soil)

MW-2
MW-3
MW-6

Lab Blank

CLIENT: Environmental Technology Engineering, Inc. LAB #: 9G212-1

SAMPLE ID: Outfall #1 MATRIX: Water

ANALYTE	RESULT	DET.LIMIT	METHOD	DATE PREP/ANALYZED	
		METALS			
Arsenic	None Detected	10. ug/L	SW846 7060	8/07/89	8/08/89
Barium	None Detected	1,000. ug/L	SW846 7080	8/07/89	8/10/89
Cadmium	None Detected	10. ug/L	SW846 7130	8/07/89	8/10/89
Chromium	None Detected	50. ug/L	SW846 7190	8/07/89	8/10/89
Chromium+6	None Detected	50. ug/L	SW846 7196	8/07/89	8/11/89
Copper	None Detected	200. ug/L	SW846 7210	8/07/89	8/10/89
Lead	None Detected	50. ug/L	SW846 7420	8/07/89	8/10/89
Mercury	None Detected	2. ug/L	SW846 7520	8/07/89	8/16/89
Selenium	None Detected	10. ug/L	SW846 7760	8/07/89	8/08/89
Zinc	None Detected	50. ug/L	SW846 7950	8/07/89	8/08/89
		WET CHEMISTRIES			
Cyanide, total	None Detected	.005 mg/L	SW846 9010	7/28/89	7/28/89
Oil & Grease	None Detected	1.0 mg/L	SW846 9070,9071	7/25/89	7/25/89
Phenolics, total	None Detected	.01 mg/L	SW846 9066	7/27/89	7/28/89
Total Suspended Solids	16. mg/L	1. mg/L	EPA 160.2	7/27/89	7/27/89

CLIENT: Environmental Technology Engineering, Inc. LAB #: 9G212-1A

SAMPLE ID: Outfall #1 MATRIX: Soil

ANALYTE	RESULT	DET.LIMIT	METHOD	DATE PREP/ANALYZED
	METALS			
Arsenic	1.9 mg/kg	0.8 mg/kg	SW846 7060	7/31/89 8/14/89
Barium	28. mg/kg	20. mg/kg	SW846 7080	7/31/89 8/10/89
Cadmium	1.5 mg/kg	1.0 mg/kg	SW846 7130	7/31/89 8/10/89
Chromium	82. mg/kg	4.0 mg/kg	SW846 7190	7/31/89 8/10/89
Chromium+6	None Detected	4.0 mg/kg	SW846 7196	7/31/89 7/27/89
Copper	76. mg/kg	8.0 mg/kg	SW846 7210	7/31/89 8/10/89
Lead	22. mg/kg	10. mg/kg	SW846 7420	7/31/89 8/10/89
Mercury	None Detected	0.040 mg/kg	SW846 7520	7/31/89 8/08/89
Selenium	None Detected	0.1 mg/kg	SW846 7760	7/31/89 8/08/89
Zinc	69. mg/kg	5.0 mg/kg	SW846 7950	7/31/89 8/08/89
	WET CHEMISTRIES			
Cyanide, total	None Detected	.5 mg/kg	SW846 9010	7/28/89 7/28/89
Oil & Grease	None Detected	1.0 mg/kg	SW846 9070,9071	7/26/89 7/26/89
Phenolics, total	None Detected	.2 mg/kg	SW846 9066	7/27/89 7/28/89

CLIENT: Environmental Technology Engineering, Inc. LAB #: 9G212-2

SAMPLE ID: Outfall #2 MATRIX: Water

ANALYTE	RESULT	DET.LIMIT	METHOD	DATE PREP/ANALYZED	
		METALS			
Arsenic	None Detected	10. ug/L	SW846 7060	8/07/89	8/08/89
Barium	None Detected	1,000. ug/L	SW846 7080	8/07/89	8/10/89
Cadmium	None Detected	10. ug/L	SW846 7130	8/07/89	8/10/89
Chromium	None Detected	50. ug/L	SW846 7190	8/07/89	8/10/89
Chromium+6	None Detected	50. ug/L	SW846 7196	8/07/89	8/11/89
Copper	None Detected	200. ug/L	SW846 7210	8/07/89	8/10/89
Lead	None Detected	50. ug/L	SW846 7420	8/07/89	8/10/89
Mercury	None Detected	2. ug/L	SW846 7520	8/07/89	8/16/89
Selenium	None Detected	10. ug/L	SW846 7760	8/07/89	8/08/89
Zinc	None Detected	50. ug/L	SW846 7950	8/07/89	8/08/89
		WET CHEMISTRIES			
Cyanide, total	None Detected	.005 mg/L	SW846 9010	7/28/89	7/28/89
Oil & Grease	None Detected	1.0 mg/L	SW846 9070,9071	7/25/89	7/25/89
Phenolics, total	None Detected	.01 mg/L	SW846 9066	7/27/89	7/28/89
Total Suspended Solids	3. mg/L	1. mg/L	EPA 160.2	7/27/89	7/27/89

CLIENT: Environmental Technology Engineering, Inc. LAB #: 9G212-2A

SAMPLE ID: Outfall #2 MATRIX: Soil

ANALYTE	RESULT	DET.LIMIT	METHOD	DATE PREP/ANALYZED	
		METALS			
Arsenic	3.7 mg/kg	2.0 mg/kg	SW846 7060	7/31/89	8/14/89
Barium	56. mg/kg	20. mg/kg	SW846 7080	7/31/89	8/10/89
Cadmium	1.7 mg/kg	1.0 mg/kg	SW846 7130	7/31/89	8/10/89
Chromium	71. mg/kg	4.0 mg/kg	SW846 7190	7/31/89	8/10/89
Chromium+6	None Detected	4.0 mg/kg	SW846 7196	7/31/89	7/27/89
Copper	10. mg/kg	4.0 mg/kg	SW846 7210	7/31/89	8/10/89
Lead	14. mg/kg	10. mg/kg	SW846 7420	7/31/89	8/10/89
Mercury	None Detected	0.040 mg/kg	SW846 7520	7/31/89	8/08/89
Selenium	None Detected	0.1 mg/kg	SW846 7760	7/31/89	8/08/89
Zinc	23. mg/kg	1.0 mg/kg	SW846 7950	7/31/89	8/08/89
		WET CHEMISTRIES			
Cyanide, total	None Detected	.5 mg/kg	SW846 9010	7/28/89	7/28/89
Oil & Grease	None Detected	1.0 mg/kg	SW846 9070,9071	7/26/89	7/26/89
Phenolics, total	.3 mg/kg	.2 mg/kg	SW846 9066	7/27/89	7/28/89

CLIENT: Environmental Technology Engineering, Inc. LAB #: 9G212-3

SAMPLE ID: Outfall #3 MATRIX: Water

ANALYTE	RESULT	DET.LIMIT	METHOD	DATE PREP/ANALYZED	
		METALS			
Arsenic	None Detected	10. ug/L	SW846 7060	8/07/89	8/08/89
Barium	None Detected	1,000. ug/L	SW846 7080	8/07/89	8/10/89
Cadmium	None Detected	10. ug/L	SW846 7130	8/07/89	8/10/89
Chromium	None Detected	50. ug/L	SW846 7190	8/07/89	8/10/89
Chromium+6	None Detected	50. ug/L	SW846 7196	8/07/89	8/11/89
Copper	None Detected	200. ug/L	SW846 7210	8/07/89	8/10/89
Lead	None Detected	50. ug/L	SW846 7420	8/07/89	8/10/89
Mercury	None Detected	2. ug/L	SW846 7520	8/07/89	8/16/89
Selenium	None Detected	10. ug/L	SW846 7760	8/07/89	8/08/89
Zinc	None Detected	50. ug/L	SW846 7950	8/07/89	8/08/89
		WET CHEMISTRIES			
Cyanide, total	None Detected	.005 mg/L	SW846 9010	7/28/89	7/28/89
Oil & Grease	None Detected	1.0 mg/L	SW846 9070,9071	7/25/89	7/25/89
Phenolics, total	None Detected	.01 mg/L	SW846 9066	7/27/89	7/28/89
Total Suspended Solids	66. mg/L	1. mg/L	EPA 160.2	7/27/89	7/27/89

CLIENT: Environmental Technology Engineering, Inc. LAB #: 9G212-3A

SAMPLE ID: Outfall #3 MATRIX: Soil

ANALYTE	RESULT	DET.LIMIT	METHOD	DATE PREP/ANALYZED
	METALS			
Arsenic	11.9 mg/kg	2.0 mg/kg	SW846 7060	7/31/89 8/14/89
Barium	181. mg/kg	20. mg/kg	SW846 7080	7/31/89 8/10/89
Cadmium	1.2 mg/kg	1.0 mg/kg	SW846 7130	7/31/89 8/10/89
Chromium	50. mg/kg	4.0 mg/kg	SW846 7190	7/31/89 8/10/89
Chromium+6	None Detected	4.0 mg/kg	SW846 7196	7/31/89 7/27/89
Copper	31. mg/kg	4.0 mg/kg	SW846 7210	7/31/89 8/10/89
Lead	30. mg/kg	10. mg/kg	SW846 7420	7/31/89 8/10/89
Mercury	None Detected	0.040 mg/kg	SW846 7520	7/31/89 8/08/89
Selenium	None Detected	0.1 mg/kg	SW846 7760	7/31/89 8/08/89
Zinc	63. mg/kg	5.0 mg/kg	SW846 7950	7/31/89 8/08/89
	WET CHEMISTRIES			
Cyanide, total	None Detected	.5 mg/kg	SW846 9010	7/28/89 7/28/89
Oil & Grease	None Detected	1.0 mg/kg	SW846 9070,9071	7/26/89 7/26/89
Phenolics, total	None Detected	.2 mg/kg	SW846 9066	7/27/89 7/28/89

CLIENT: Environmental Technology Engineering, Inc. LAB #: 9H021-1

SAMPLE ID: MW-2 MATRIX: Water

ANALYTE	RESULT	DET.LIMIT	METHOD	DATE PREP/ANALYZED
		METALS		
Arsenic	None Detected	10. ug/L	SW846 7060	8/07/89 8/22/89
Barium	None Detected	1,000. ug/L	SW846 7080	8/07/89 8/10/89
Cadmium	None Detected	10. ug/L	SW846 7130	8/07/89 8/10/89
Chromium	None Detected	50. ug/L	SW846 7190	8/07/89 8/10/89
Chromium+6	None Detected	50. ug/L	SW846 7196	8/07/89 8/22/89
Copper	None Detected	200. ug/L	SW846 7210	8/07/89 8/10/89
Lead	None Detected	50. ug/L	SW846 7420	8/07/89 8/09/89
Mercury	None Detected	2. ug/L	SW846 7520	8/07/89 8/16/89
Selenium	None Detected	10. ug/L	SW846 7760	8/07/89 8/08/89
Zinc	110. ug/L	50. ug/L	SW846 7950	8/07/89 8/08/89
		WET CHEMISTRIES		
Cyanide, total	None Detected	.005 mg/L	SW846 9010	8/04/89 8/04/89
Phenolics, total	None Detected	.01 mg/L	SW846 9066	8/09/89 8/10/89
Total Organic Carbon	2. mg/L	1. mg/L	SW846 9060	8/11/89 8/11/89

CLIENT: Environmental Technology Engineering, Inc. LAB #: 9H021-2

SAMPLE ID: MW-3 MATRIX: Water

ANALYTE	RESULT	DET.LIMIT	METHOD	DATE PREP/ANALYZED	
		METALS			
Arsenic	None Detected	10. ug/L	SW846 7060	8/07/89	8/14/89
Barium	None Detected	1,000. ug/L	SW846 7080	8/07/89	8/10/89
Cadmium	None Detected	10. ug/L	SW846 7130	8/07/89	8/10/89
Chromium	None Detected	50. ug/L	SW846 7190	8/07/89	8/10/89
Chromium+6	None Detected	50. ug/L	SW846 7196	8/07/89	8/11/89
Copper	None Detected	200. ug/L	SW846 7210	8/07/89	8/10/89
Lead	None Detected	50. ug/L	SW846 7420	8/07/89	8/09/89
Mercury	None Detected	2. ug/L	SW846 7520	8/07/89	8/16/89
Selenium	None Detected	10. ug/L	SW846 7760	8/07/89	8/08/89
Zinc	160. ug/L	50. ug/L	SW846 7950	8/07/89	8/08/89
		WET CHEMISTRIES			
Cyanide, total	None Detected	.005 mg/L	SW846 9010	8/04/89	8/04/89
Phenolics, total	None Detected	.01 mg/L	SW846 9066	8/09/89	8/10/89
Total Organic Carbon	None Detected	1. mg/L	SW846 9060	8/11/89	8/11/89

CLIENT: Environmental Technology Engineering, Inc. LAB #: 9H021-3

SAMPLE ID: MW-6 MATRIX: Water

ANALYTE	RESULT	DET.LIMIT	METHOD	DATE PREP/ANALYZED	
		METALS			
Arsenic	None Detected	10. ug/L	SW846 7060	8/07/89	8/08/89
Barium	None Detected	1,000. ug/L	SW846 7080	8/07/89	8/10/89
Cadmium	None Detected	10. ug/L	SW846 7130	8/07/89	8/10/89
Chromium	None Detected	50. ug/L	SW846 7190	8/07/89	8/10/89
Chromium+6	None Detected	50. ug/L	SW846 7196	8/07/89	8/11/89
Copper	None Detected	200. ug/L	SW846 7210	8/07/89	8/10/89
Lead	None Detected	50. ug/L	SW846 7420	8/07/89	8/09/89
Mercury	None Detected	2. ug/L	SW846 7520	8/07/89	8/16/89
Selenium	None Detected	10. ug/L	SW846 7760	8/07/89	8/08/89
Zinc	None Detected	50. ug/L	SW846 7950	8/07/89	8/08/89
		WET CHEMISTRIES			
Cyanide, total	None Detected	.005 mg/L	SW846 9010	8/04/89	8/04/89
Phenolics, total	None Detected	.01 mg/L	SW846 9066	8/09/89	8/10/89
Total Organic Carbon	4. mg/L	1. mg/L	SW846 9060	8/11/89	8/11/89

CLIENT: Environmental Technology Engineering, Inc. LAB #: 9G212

SAMPLE ID: Lab Blank MATRIX: Water

ANALYTE	RESULT	DET.LIMIT	METHOD	DATE PREP/ANALYZED	
		METALS			
Arsenic	None Detected	10. ug/L	SW846 7060	8/07/89	8/08/89
Barium	None Detected	1,000. ug/L	SW846 7080	8/07/89	8/10/89
Cadmium	None Detected	10. ug/L	SW846 7130	8/07/89	8/10/89
Chromium	None Detected	50. ug/L	SW846 7190	8/07/89	8/10/89
Chromium+6	None Detected	50. ug/L	SW846 7196	8/07/89	8/11/89
Copper	None Detected	200. ug/L	SW846 7210	8/07/89	8/10/89
Lead	None Detected	50. ug/L	SW846 7420	8/07/89	8/10/89
Mercury	None Detected	2. ug/L	SW846 7520	8/07/89	8/16/89
Selenium	None Detected	10. ug/L	SW846 7760	8/07/89	8/08/89
Zinc	None Detected	50. ug/L	SW846 7950	8/07/89	8/08/89
		WET CHEMISTRIES			
Cyanide, total	None Detected	.005 mg/L	SW846 9010	7/28/89	7/28/89
Oil & Grease	None Detected	1.0 mg/L	SW846 9070,9071	7/25/89	7/25/89
Phenolics, total	None Detected	.01 mg/L	SW846 9066	7/27/89	7/28/89
Total Suspended Solids	None Detected	1. mg/L	EPA 160.2	7/27/89	7/27/89

CLIENT: Environmental Technology Engineering, Inc. LAB #: 9G212

SAMPLE ID: Lab Blank MATRIX: Solid

ANALYTE	RESULT	DET.LIMIT	METHOD	DATE PREP/ANALYZED	
		METALS			
Arsenic	None Detected	0.01 mg/L	SW846 7060	7/31/89	8/08/89
Barium	None Detected	1.0 mg/L	SW846 7080	7/31/89	8/10/89
Cadmium	None Detected	0.05 mg/L	SW846 7130	7/31/89	8/10/89
Chromium	None Detected	0.2 mg/L	SW846 7190	7/31/89	8/10/89
Chromium+6	None Detected	0.2 mg/L	SW846 7196	7/31/89	7/27/89
Copper	None Detected	0.2 mg/L	SW846 7210	7/31/89	8/10/89
Lead	None Detected	0.2 mg/L	SW846 7420	7/31/89	8/10/89
Mercury	None Detected	0.002 mg/L	SW846 7520	7/31/89	8/08/89
Selenium	None Detected	0.01 mg/L	SW846 7760	7/31/89	8/08/89
Zinc	None Detected	0.05 mg/L	SW846 7950	7/31/89	8/08/89
		WET CHEMISTRIES			
Cyanide, total	None Detected	.005 mg/L	SW846 9010	7/28/89	7/28/89
Oil & Grease	None Detected	1.0 mg/kg	SW846 9070,9071	7/26/89	7/26/89
Phenolics, total	None Detected	0.01 mg/L	SW846 9066	7/28/89	7/28/89

CLIENT: Environmental Technology Engineering, Inc. LAB #: 9H021

SAMPLE ID: Lab Blank MATRIX: Water

ANALYTE	RESULT	DET.LIMIT	METHOD	DATE PREP/ANALYZED	
		METALS			
Arsenic	None Detected	10. ug/L	SW846 7060	8/07/89	8/08/89
Barium	None Detected	1,000. ug/L	SW846 7080	8/07/89	8/10/89
Cadmium	None Detected	10. ug/L	SW846 7130	8/07/89	8/10/89
Chromium	None Detected	50. ug/L	SW846 7190	8/07/89	8/10/89
Chromium+6	None Detected	50. ug/L	SW846 7196	8/07/89	8/11/89
Copper	None Detected	200. ug/L	SW846 7210	8/07/89	8/10/89
Lead	None Detected	50. ug/L	SW846 7420	8/07/89	8/09/89
Mercury	None Detected	2. ug/L	SW846 7520	8/07/89	8/16/89
Selenium	None Detected	10. ug/L	SW846 7760	8/07/89	8/08/89
Zinc	None Detected	50. ug/L	SW846 7950	8/07/89	8/08/89
		WET CHEMISTRIES			
Cyanide, total	None Detected	.005 mg/L	SW846 9010	7/27/89	7/27/89
Phenolics, total	None Detected	.01 mg/L	SW846 9066	7/27/89	7/28/89
Total Organic Carbon	None Detected	1. mg/L	SW846 9060	7/27/89	7/27/89

WADSWORTH/ALERT LABORATORIES
4101 SHUFFEL DRIVE N.W./NORTH CANTON, OHIO 44720
(216) 497-9396

Chain-of Custody Record

№ 15821

PROJ. NO.: 26288101

PROJECT NAME/LOCATION: BARITE HILL / McCORMICK SC.

SAMPLERS: (Signature) LEAPHART / ETE

PARAMETER: METALS w/ HNO3 (As, Cd, Cu, Hg, Pb, Zn, Ba, Cr 3+) | CR+6 | PHENOLS w/ H2SO4 | CYANIDE w/ NaOH | OIL + GREASE w/ H2SO4 | TSS w/

REMARKS: 96212

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	METALS	CR+6	PHENOLS	CYANIDE	OIL + GREASE	TSS		REMARKS
STREAM OUTFALL #1	7/20	1000		✓	OUTFALL #1 (H_2O)	5	1	1	1	1	1			~~SAMPLES~~ 96212-1
OUTFALL #2	7/20	1130		✓	" #2 (H_2O)	5	1	1	1	1	1			-2
OUTFALL #3	7/20	1330		✓	" #3 (H_2O)	5	1	1	1	1	1			-3
OUTFALL #1A	7/20	1000	✓		OUTFALL #1 (SOIL)	2				(96212-1A)				SOIL SAMPLED FOR METALS
OUTFALL #2A	7/20	1130	✓		" #2 (SOIL)	2				(96212-2A)				PHENOLS, CYANIDE, + OIL + GREASE
OUTFALL #3A	7/20	1330	✓		" #3 (SOIL)	2				(96212-3A)				

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
James H. Kaufman [signature]	7/20 1700	Joanne Anderson 7/21/89	Joanne Anderson 7/24/89	7-25-89 1:15	Stephanie May
				7-25-89 1:15	Stephanie May

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
				Sample immediately iced and shipped for Transport. 1 WEEK TAT

Distribution Original Accompanies Shipment. Copy returned with Report.

WADSWORTH/ALERT LABORATORIES

4101 SHUFFEL DRIVE N.W./NORTH CANTON, OHIO 44720
(216) 497-9396

FLA.

No 10.

Chain-of Custody Record

PROJ. NO. 26288101

PROJECT NAME/LOCATION BARITE HILL / MCCORMICK S.C

SAMPLERS: (Signature) LEAPHART, HOOK / ETE

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	PARAMETER: METALS w/ HNO3 (As, Cd, Pb, Se, Ba, K, Zn, Cr, Cr+6)	PARAMETER: CYANIDE w/ NaOH	PARAMETER: PHENOLS w/ H2SO4	PARAMETER: TOC w/ HCL	PARAMETER: Cr+6 w/ HNO3	REMARKS
MW 2	8/1	1410		✓		5	1	1	1	2		
MW 3	8/1	1320		✓		5	1	1	1	2		
MW 6	8/1	1430		✓		5	1	1	1	2		
~~STREAM~~ 1	8/1	1410		✓	STREAM OUTFALL 1	1					1	
2	8/1	1430		✓	" " 2	1					1	
3	8/1	1320		✓	" " 3	1					1	

9H021

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
James A Leaphart	8/1/89 1700	Joanne Anderson 8/2/89 0900	Joanne Anderson 8/2/89 0915	8/2/89 0915	

Remarks: SAMPLES IMMEDIATLY ICED AND SHIPPED TO LAB

Distribution Original Accompanies Shipment. Copy returned with Report.